

LETTER TO EDITOR

COVID-19 AND BLOOD BANK: ROLE OF PATHOGEN INACTIVATION

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ABSTRACT: In December 2019, a new coronavirus named severe acute respiratory syndrome virus (SARS-CoV-2) causing pneumonia was detected in Wuhan, China. The recognition of newly described infectious agents poses a threat to blood safety. In a study on COVID-19 patients, RNAemia (presence of 2019-nCoV RNA in plasma of the patient) has been seen in 15% (6/41) of the cases. Therefore, because of a long asymptomatic but viremic phase there is a theoretical risk of transmission of COVID-19 through blood transfusion and careful surveillance is required with regards to blood safety. We highlight the role of incorporation of pathogen inactivation techniques in blood components to prevent transfusion transmission of newer emerging pathogens.

KEYWORDS: Coronavirus; Pathogen Inactivation; Newer emerging pathogens

LETTER TO EDITOR:

The safety of blood and blood products has increased considerably with the advancements in microbiological techniques for detecting agents of known transfusion transmitted infections. However, many newly described infectious agents have been recognised which poses a threat to blood safety. In 2009, American Association of Blood Banks (AABB) published a supplement which reviewed and categorised the emerging infectious disease posing a threat to blood safety [1]. According to the supplement, the risk of transfusion transmission is considered theoretical if the infectious agent has a blood phase during asymptomatic period [1].

Coronaviruses are a family of viruses which can cause disease ranging from common cold to severe diseases such as severe acute respiratory syndrome. Till date, seven coronaviruses have been shown to infect human beings. In December 2019, a new coronavirus named severe acute respiratory syndrome virus (SARS-CoV-2) causing pneumonia was detected in Wuhan, China [2]. The disease caused by SARS-CoV-2 was named Coronavirus Disease 2019 (COVID-19). The outbreak was declared a global pandemic by World Health Organisation and there are more than 2.4 million confirmed COVID-19 cases as on 20th April, 2020.

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The incubation period of COVID-19 is estimated to range between 2-14 days. Most of the patients of COVID-19 present with fever, sore throat, running nose and generalised body ache. The most common mode of transmission is through droplets from human to human. However, there are many unknowns about this virus and a large number of asymptomatic carriers have also been reported [3]. Huang and colleagues detected RNAemia (presence of 2019-nCoV RNA in plasma of the patient) in 15% (6/41) of the cases [4]. The long asymptomatic but viremic phase poses a risk of transmission of SARS-CoV-2 from blood transfusion if the blood is collected from such asymptomatic donor. However, no case of transfusion transmitted of SARS-CoV-2 has been reported till date. Therefore, there is only theoretical risk of transmission through blood transfusion and careful surveillance is required with regards to blood safety. National Blood Transfusion Council (NBTC), India has recommended a temporary donor deferral of 28 days for individuals with a history of travel to country with known community transmission of COVID-19. In addition, there is a temporary donor deferral of 28 days for any confirmed case of COVID-19 or a primary contact of COVID-19 suspect/ patient [5].

Until more information becomes available about the risk of transfusion transmission of COVID-19, pathogen inactivation can be used as an important safety measure. Coronaviruses are enveloped, single stranded RNA viruses which have been found to be stable at 4°C. Pathogen inactivation involves the use of a nucleic acid binding compound followed by photo illumination of the blood component which results in inactivation of existing or unknown pathogens. Pathogen inactivation has been found effective in a recent study in which platelets treated with amotosalen and, ultraviolet A illumination resulted in complete inactivation of Middle East respiratory syndrome-Coronavirus (MERS-CoV) [6].

In conclusion, the rapid spread of SARS-CoV-2 and the severity of its magnitude highlights the need for incorporation of pathogen inactivation techniques for blood component to prevent transfusion transmission of newer emerging pathogens.

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